

Special Issue on
**Nanomaterial for Electrochemical Conversion-to-Storage
Energy Devices**

CALL FOR PAPERS

The goal of renewable energy devices is to apply stable, high-efficiency energy-conversion technologies that would satisfy the grid-scale storage application and subsequently attain the low-cost requirement for serving as an alternative plan for fossil fuel. On the other hand, the development of high-performance rechargeable batteries and supercapacitors with higher energy and power density values is crucial for the applications in electric vehicles and grid-scale storage of renewable energy-based technologies. In order to attain the highest efficiency, the cross-links between renewable energy-conversion systems and rechargeable energy-storage systems have attracted high attention. Among various energy-conversion and energy-storage devices, the electrochemical systems theoretically have a great potential to attain high efficiency and high energy density.

Advances in nanotechnology and nanomaterials have enabled the fabrication of new electrochemical energy-conversion and energy-storage materials with progressing performances. With the support of nanoscopic analysis, the investigation of reaction mechanisms shows scientific insights into further benefiting the processes optimization and devices practicality. Specifically, nanostructures and nanomaterials enabling novel, enhanced properties and functions have a great potential in boosting the photovoltaic technologies and fuel-to-electricity conversion efficiency. Nanoenergy storage materials used in both cathode and anode as active materials and electrode substrates are able to optimize lithium-ion battery performances and to further develop new electrode active materials. Besides developing new materials, nanotechnology and nanoscopic analysis establish comprehensive understanding of the electrochemistry, mechanisms, and kinetics.

The purpose of this special issue is to publish high-quality research papers and review articles focused on various aspects of electrochemical energy conversion and storage materials/devices employing nanomaterials, applying nanoprocess technologies, and using nanoscopic analysis.

Potential topics include but are not limited to the following:

- ▶ Nanomaterials science for advancing electrochemical energy materials and performances
- ▶ Nanoscopic characterization on electrochemical energy materials
- ▶ Electrochemical energy-conversion system and materials, such as fuel cells and solar cells in nanoscale
- ▶ Nanomaterial in electrochemical energy-storage technology, such as lithium and lithium-ion batteries and supercapacitors

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/jnm/necsd/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Sheng-Heng Chung, Texas Materials
Institute, Austin, USA
shchung@utexas.edu

Guest Editors

Gnana Kumar, Madurai Kamaraj
University, Madurai, India
kumarg2006@gmail.com

Richa Singhal, Birla Institute of
Technology & Science, Pilani, India
richas@goa.bits-pilani.ac.in

Submission Deadline

Friday, 13 July 2018

Publication Date

November 2018